

REMARKS

Applicants will address each of the Examiner's rejections in the order in which they appear in the Office Action.

Claim Rejections - 35 USC §103

Claims 26-28, 30-31 and 35

In the Office Action, the Examiner rejects Claims 26-28, 30-31 and 35 under 35 USC §103(a) as being unpatentable over Matsuda (US 6,078,071) in view of Oikawa et al. (US 4,619,695) and Shindo et al. (US 5,667,665). This rejection is respectfully traversed.

While Applicants traverse this rejection, in order to advance the prosecution of this application, Applicants are amending independent Claims 26 and 31 to recite the feature of forming a film including tungsten by a sputtering method using simple argon gas as a sputtering gas. This feature is supported by, for example, paragraph [0065] of the substitute specification.

Dependent Claims 28 and 33, now canceled, previously recited wherein the sputtering method uses argon as a sputtering gas. In the rejection of these claims, the Examiner contends that this feature is shown in Oikawa at col. 2, lns. 3-6. This section in Oikawa, however, merely discusses use of argon ion bombardment during sputtering.

In contrast, independent Claims 26 and 31, as amended, recite a sputtering method using simple argon gas as a sputtering gas (emphasis added). By using simple argon gas as a sputtering gas, the present invention is able to overcome the problems discussed in paragraphs [0004] - [0007] of the substitute specification. The cited references do not disclose or suggest this feature.

In addition, as Applicants previously explained and which bears repeating, independent Claim 26 is directed to a method of manufacturing a wiring in a semiconductor device wherein the

wiring is formed of a film including tungsten film and wherein an amount of sodium contained within the wiring is 0.3 ppm or less. The Examiner admits that this last feature of Claim 26 is not disclosed in Matsuda. The Examiner, however, contends that Oikawa discloses this feature at col. 6, lns. 16-26 and col. 8, lns 6-13 in Oikawa.

Applicants respectfully disagree. Claim 26 clearly recites an amount of sodium within the wiring. In contrast, Col. 6, lns. 16-26 and col. 8, lns. 6-16 in Oikawa are directed to sodium concentration in the target. The sodium concentration in the target is not the same as sodium concentration in the wiring. For example, the specification for the present application recites a target purity (see e.g. [0065] in the substitute-specification; [0033] in translation) and a sodium concentration for a wiring (see e.g. [0069] in substitute-specification; [0037] in translation) in a different manner and place. Hence, they are not the same. In the prior Advisory Action, the Examiner agrees that this is true.

As a result, Applicants respectfully submit that the disclosure in Oikawa cannot be used to allege a teaching of an amount of sodium within the wiring. Therefore, Oikawa does not disclose or suggest of the claimed feature of Claim 26 of wherein an amount of sodium contained within the wiring is 0.3 ppm or less.

In the prior Advisory Action, the Examiner further argued that Oikawa “discloses that the purity of the deposited film is governed by the purity of the target (see col. 2, lines 4-12).” However, as previously explained, this section in Oikawa is discussing a molybdenum target, not tungsten as in Claim 26, and is not relevant to the claimed invention. Further, there is nothing in this section in Oikawa that discloses the amount of sodium in the wiring or how the target purity is related on a quantitative basis with the amount of material in the wiring. Col. 3, lines 51-59 in Oikawa also discusses a molybdenum target and not tungsten and is not relevant to the claimed invention.

The Examiner previously cited the teachings in the specification of the present application and concluded that inherently similar results would be obtained. Applicants respectfully submit that this is improper. Initially, the use of the teachings of the present invention in the present application as the basis of a rejection is improper hindsight reconstruction. Further, the Examiner has provided no support for the hypothetical conclusion that this rejection is based on.

Independent Claim 31 includes the feature of wherein an amount of sodium contained within the gate electrode is 0.3 ppm or less. For similar reasons as discussed above for Claim 26, Claim 31 is also not disclosed or suggested by Oikawa.

Further, Shindo is directed to a film formed using a cobalt target, not a film including tungsten, as in the claimed invention. In fact, Shindo teaches away from the use of tungsten. See col. 1, lns. 18-23 in Shindo. Hence, it is not relevant to the claimed invention, and combining it with the other references to arrive at the claimed invention is improper. In addition, there would be no motivation to make such a combination.

Accordingly, the cited references do not disclose or suggest the method of Claims 26-28, 30, 31 and 35, the rejection over the cited references is improper, and the claims are patentable over the cited references. Therefore, it is respectfully requested that this rejection be withdrawn.

Claims 29-30 and 32-35

The Examiner also rejects Claims 29-30 and 32-35 under 35 USC §103(a) as being unpatentable over Matsuda in view of Oikawa and Shindo and further in view of Brodsky et al. (US 6,245,668). This rejection is also respectfully traversed.

These claims are dependent claims. Therefore, for at least the reasons discussed above for independent Claims 26 and 31, these claims are also patentable over the cited references.

Accordingly, it is respectfully requested that this rejection be withdrawn.

Claims 36 and 41

The Examiner also rejects Claims 36 and 41 under 35 USC §103(a) as being unpatentable over Matsuda in view of Oikawa and Shindo and further in view of Kobeda et al. (US 5,208,170). This rejection is also respectfully traversed.

While Applicants traverse this rejection, in order to advance the prosecution of this application, Applicants are amending independent Claims 36 and 41 in a similar manner to Claims 26 and 31. Therefore, for at least the reasons discussed above, the cited references do not disclose or suggest the method of independent Claims 36 and Claim 41, and the rejection thereover is improper. Hence, these claims are patentable over the cited references. Therefore, it is respectfully requested that this rejection be withdrawn.

Claims 37-40 and 42-45

The Examiner also rejects Claims 37-40 and 42-45 under 35 USC §103(a) as being unpatentable over Matsuda in view of Oikawa, Shindo, and Koeda and further in view of Brodsky. This rejection is also respectfully traversed.

These claims are dependent claims. Therefore, for at least the reasons discussed above for the independent claims, these claims are also patentable over the cited references. Accordingly, it is respectfully requested that this rejection be withdrawn.

Claims 46-49

The Examiner also rejects Claims 46-49 under 35 USC §103(a) as being unpatentable over

“the cited references, as applied above, and further in view of” Mizuno et al. (US 5,840,366). This rejection is also respectfully traversed.

These claims are dependent claims. Therefore, for at least the reasons discussed above for the independent claims, these claims are also patentable over the cited references. Accordingly, it is respectfully requested that this rejection be withdrawn.

Conclusion

Accordingly, for at least the above-stated reasons, the present application is in a condition for allowance and should be allowed.

If any fee should be due for this amendment, please charge our deposit account 50/1039.

Favorable reconsideration is earnestly solicited.

Respectfully submitted,



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